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09/936,563

09/14/2001

Gerard Mathis

LOM 24

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05/31/2006

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EXAMINER

TUNG, JOYCE

ART UNIT

PAPER NUMBER

1637

DATE MAILED: 05/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/936,563

Applicant(s)

MATHIS ET AL.

Examiner

Joyce Tung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17, 19-40 and 47-62 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9, 13, 15, 19-29, 33, 35-37, 39, 47-50, 53-56, 61 and 62 is/are rejected.
- 7) ☒ Claim(s) 10-12, 14, 16, 30-32, 34, 38, 40, 51-52, 57-60 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

### DETAILED ACTION

The applicant's response filed 3/13/2006 to the Office action has been entered. Claims 1-17, 19-40 and 47-58.

1. Claims 1-9, 13, 15, 17, 20-29, 33, 35-37, 39, 47-49, 53-54, 56 and 61-62 remain rejected under 35 U.S.C. 102(b) as being anticipated by Sessler et al. (US 5,559,207, issued September 24, 1996).

Sessler et al. disclose a method of phosphate ester hydrolysis including using a texaphyrin metal complex (See the Abstract). The metal complex is covalently coupled with amine, thiol or hydroxyl linked oligonucleotides (See column 8, lines 5-9 or Fig. 3A-3C). The oligonucleotide is 5 to 50 nucleotides in length (See fig. 2B). The oligonucleotide is covalently bonded directly or via a spacer arm (See fig. 2B). The metal compound is europium cryptate (See column 3, lines 56-65). The tripyrrane dissolved to form a homogeneous orange solution, which turned to a fluorescent orange color (See column 10, lines 27-30). The oligonucleotide analogues contain one or more thiol groups (See column 18, lines 41-49).

Since there is no chemical structure cited for a rare-earth metal cryptate in the claims above, any chemical structure compound with the metal complex is interpreted as a rare-earth metal cryptate, the teachings of Sessler et al. anticipate the limitations of the claims.

The response argues that the rejection makes no mention of a biological molecules. However, Sessler et al. disclose that a preferred substrate is RNA and a preferred texaphyrin is a derivatized texaphyrin having binding specificity, in particular, a texaphyrin covalently coupled to a site-directed molecule, an oligonucleotide (See the Abstract). The RNA molecule is the

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biological molecule. In addition, since there is no definition regarding a biological molecule, any molecule is considered to be a biological molecule.

The response further argues that the rejection fails to present any explanation as to why one of ordinary skill in the art would consider any texaphyrin metal complex as a cryptate metal complex. However, as discussed in the rejection, since there is no chemical structure cited for a rare-earth metal cryptate in the claims above, any chemical structure compound with the metal complex is interpreted as a rare-earth metal cryptate, the teachings of Sessler et al. anticipate the limitations of the claims.

The response also provides the excerpt from IUPAC which describes cryptands as being “macrobicyclic, macrotricyclic, etc, compounds generally having nitrogen atoms at the bridgehead positions”. The features of the compounds discussed herein were disclosed by Sessler et al. (See fig. 3A-3C). The response indicates that the excerpt disclose that “coplanar cyclic polydentate ligands, such as porphyrine, are not regarded as cryptands”. However, these limitations are not relevant to the claims. Based upon the discussion set forth above, the rejection is maintained.

2. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sessler et al. (US 5,559,207, issued September 24, 1996) as applied to claims 1-9, 13, 15, 17, 20-29, 33, 35-37, 39, 47-50, 53-55 and 61-62 above, and further in view of Zhao et al. (US 6,306,975, issued October 23, 2001).

The teachings of Sessler et al. are set forth in section 4 above. Sessler et al. do not disclose a fluorescent label comprising an acceptor fluorescent compound in an assay.

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Zhao et al. disclose a rare earth metal complex used as a donor label in a non-radioactive energy transfer reactions assay and an acceptor, which is fluorescent label, is used in the assay (See column 26 lines 40-57).

One of ordinary skill in the art would have been motivated to apply a fluorescent label as an acceptor as taught by Zhao et al. because if europium cryptate is used as a donor in a non-radioactive energy transfer reactions assay, APC, a phycobiliprotein will be used as an acceptor, since the phycobiliprotein has high molar absorptivity at cryptate emission wavelength which provides high transfer efficiency (See column 26, lines 64-67 and column 27, lines 1-2). It would have been prima facie obvious to have a fluorescent label as an acceptor in the assay.

The response does not have a specific argument for this rejection. With the reasons as discussed above, the rejection is maintained.

***Allowable Subject Matter***

3. Claims 10-12, 14, 16, 30-32, 34, 38, 40, 51-52, and 57-60 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. The following is a statement of reasons for the indication of allowable subject matter:

Concerning claims 10-12, 14, 16, 30-32, 34, 38, 40, 51-52, and 57-58, no prior art has been found teaching or suggesting the rare-earth metal cryptate of formula I, which is covalently bonded to an oligonucleotide.

Concerning claims 59-60, no prior art has been found teaching or suggesting the rare-earth metal cryptate which is covalently bonded to an oligonucleotide and the oligonucleotide is

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modified at its 5' end with an aminohexyl group for binding to said cryptate and is modified at 3' end with a structure containing a maleimide group for binding to biological molecules.

The closest prior art is the reference of Sessler et al., Sessler et al. disclose that the metal complex is covalently coupled with amine, thiol or hydroxyl linked oligonucleotides (See column 8, lines 5-9 or Fig. 3A-3C). However, the metal complex does not have the chemical structure as cited in claim 10. The oligonucleotide of Sessler et al. is not modified at its 5' end with an aminohexyl group for binding to said cryptate and is not modified at 3' end with a structure containing a maleimide group for binding to the biological molecule.

### **New Ground of Rejection**

#### ***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 9, 29, 49, and 55 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Claims 9, 29, 49 and 55 are vague and indefinite because it is unclear what is the definition of directly binding the rare-earth metal cryptate to the oligonucleotide. It is unclear whether or not one atom or no atom is involved in the binding. Clarification is required.

### **Summary**

7. No claims are allowable.

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joyce Tung whose telephone number is (571) 272-0790. The examiner can normally be reached on Monday - Friday, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on 571 272-0782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Joyce Tung *JT*  
May 17, 2006

*Kenneth R. Horlick*  
KENNETH R. HORLICK, PH.D  
PRIMARY EXAMINER  
5/30/06